MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
OPERATING PERMIT TECHNICAL REVIEW DOCUMENT

Permitting and Compliance Division
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Montana-Dakota Utilities Co.
Lewis and Clark Station
Southwest ¼, Section 9, Township 22 North, Range 59 East
400 North Fourth Street
Bismarck, ND 58501

The following table summarizes the air quality programs testing, monitoring, and reporting requirements applicable to this facility.

Facility Compliance Requirements	Yes	No	Comments
Source Tests Required	X		Method 5 and 9
Ambient Monitoring Required		X	NA
COMS Required	X		Predictive
CEMS Required	X		SO_2 and NO_x
Schedule of Compliance Required		X	
Annual Compliance Certification and Semiannual Reporting Required	X		As Applicable
Monthly Reporting Required		X	
Quarterly Reporting Required	X		Predictive Opacity
Applicable Air Quality Programs			
ARM Subchapter 7 Preconstruction Permitting	X		Permit #691-031074
New Source Performance Standards (NSPS)		X	
National Emission Standards for Hazardous Air Pollutants (NESHAPS)		X	Except 40 CFR 61, Subpart M
Maximum Achievable Control Technology (MACT)	X		40 CFR 63, Subpart DDDDD
Major New Source Review (NSR)		X	
Risk Management Plan Required (RMP)		X	
Acid Rain Title IV	X		Appendix H
State Implementation Plan (SIP)	X		General SIP
Compliance Assurance Monitoring	X		Appendix I

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SECTION I. GENERAL INFORMATION

A. Purpose

This document establishes the basis for the decisions made regarding the applicable requirements, monitoring plan, and compliance status of emissions units affected by the operating permit proposed for this facility. The document is intended for reference during review of the draft and proposed permits by the EPA and the public. It is also intended to provide background information not included in the operating permit and to document issues that may become important during modifications or renewals of the permit. Conclusions in this document are based on information provided in the original application submitted by Montana-Dakota Utilities (MDU) on June 10, 1996; additional submittals on October 10, 1996, and April 11, 1997; the permit renewal application submitted June 26, 2002, and the CAM Plan submittal on September 15, 2003.

B. Facility Location

MDU operates the Lewis and Clark Station consisting of a tangential coal fired boiler capable of burning coal or natural gas and associated equipment for generation of electricity. The MDU Lewis and Clark Station is located in the Southwest ¼, of Section 9, Township 22 North, Range 59 East, Richland County, Montana.

C. Facility Background Information

Montana Air Quality Permit History

MDU received Montana air quality permit given number 691-031074 issued February 14, 1974. This permit authorized the construction of a wet scrubber for the boiler. The scrubber constructed was a venturi flooded disc scrubber.

Title V Operating Permit History

On January 1, 1998, MDU was issued final and effective, Operating Permit #OP0691-00. The permit expired on December 31, 2002.

D. Current Permit Action

On June 26, 2002, the Department of Environmental Quality (Department) received an application from MDU for permit renewal. The application was deemed administratively and technically complete on July 26, 2002.

After review of the application for permit renewal and in accordance with current Department protocol for Title V operating permit rules and requirements, the Department determined that several emitting units included in Operating Permit #OP0691-00 as significant emitting units are actually insignificant emitting units subject to only generally applicable requirements. Therefore, the following significant emitting units, as cited in Operating Permit #OP0691-00, have been placed on the insignificant emitting unit list for Operating Permit renewal #OP0691-01:

- IEU02 – Heating Boiler
- IEU03 – Diesel Fire Pump Engine
- IEU04 – Emergency Generator
- IEU06 – Fuel Storage Tank
- IEU09 – Coal Tripper House
- IEU10 – Lime Storage Silo
- IEU11 – Plant Roads

Permit #OP0691-01 was drafted on May 9, 2003. On September 15, 2003, the Department received a

Compliance Assurance Monitoring Plan (CAM Plan) from MDU as specified in ARM 17.8.1507 and 17.8.1508. Because this applicable requirement was not included in the Draft OP0691-01, the permit was redrafted as Permit #OP0691-02. The Department included a summary table in Appendix I of MDU's Title V Operating Permit #OP0691-02. A copy of the complete CAM Plan is available upon request to the Department or the facility.

Permit #OP0691-02 replaces Permit #OP0691-00.

E. Taking and Damaging Analysis

HB 311, the Montana Private Property Assessment Act, requires analysis of every proposed state agency's administrative rule, policy, permit condition or permit denial, pertaining to an environmental matter, to determine whether the state action constitutes a taking or damaging of private real property that requires compensation under the Montana or U.S. Constitution. As part of issuing an operating permit, the Department is required to complete a Taking and Damaging Checklist. The checklist was completed on March 24, 2003, and is contained in the Department files.

F. Compliance Designation

The facility was last inspected on August 28, 2002, and was found to be in compliance with all Department regulations and permit conditions. Additional inspections were conducted on June 12, 2001; August 10-19, 1999; and February 24, 1999. The inspections reports indicate compliance with all Department regulations and permit conditions for the MDU facility.

SECTION II. SUMMARY OF EMISSION UNITS

A. Facility Process Description

MDU – Lewis and Clark Station operates a tangential coal and natural gas fired boiler capable of burning coal or natural gas and associated equipment for the generation of electricity.

B. Emission Units and Pollution Control Device Identification

Emissions Unit ID	Description	Pollution Control Device/Practice
EU01	Tangential Coal and Natural Gas Fired Boiler	Multi-Cyclone and Flooded Disc Wet Scrubber
EU07	Coal Storage Piles	Water-dust suppression
EU08	Fugitive Coal Ash & Lime Handling Emissions	Enclosure/Fabric filter baghouse

EU01 (Tangential Coal and Natural Gas Fired Boiler) has burned mostly lignite coal and natural gas in the past, but can burn a mixture of coals. There are no applicable requirements that limit the type of coal combusted in the unit. Before 1996, the boiler exhaust gases could exhaust through the main stack or in cases as necessary through a bypass stack. MDU locked off the bypass stack in 1995 and no longer uses it since the bypass stack does not have the required 40 CFR 75 monitors. This has resulted in the operation procedure that when the scrubber trips, the boiler shuts down.

EU07 (Coal Storage Piles), both active and inactive, are considered significant emitting units because the potential to emit is greater than 5 tons per year. The control practice for the coal storage piles (both active and reserve) is water-dust suppression.

EU08 (Fugitive Coal, Ash & Lime Handling Emissions), has the potential to emit greater than 5 tons per year of fugitive emissions, therefore, is considered a significant emissions unit. The control

measures are enclosures and a fabric filter baghouse in a closed loop system.

C. Categorically Insignificant Sources/Activities

The Administrative Rules of Montana (ARM) 17.8.1201(22)(a) defines an insignificant emissions unit as one that emits less than 5 tons per year of any regulated pollutant, has the potential to emit less than 500 pounds per year of lead or any hazardous air pollutant, and is not regulated by any applicable requirement other than a generally applicable requirement. The following is a list of the emissions units that are included as insignificant in MDU's draft operating permit.

Emissions Unit ID	Description
EU02	Heating Boiler
EU03	Diesel Fire Pump Engine
EU04	Emergency Generator
EU05	Miscellaneous Space Heaters
EU06	Fuel Storage Tank
EU09	Coal Tripper House
EU10	Lime Storage Silo
EU11	Plant Roads
EU12	Vehicle Air Conditioning

EU02 (Natural Gas Heating Boiler) in the original application was listed as a significant emitting unit presumably for total particulate PTE of 16.6 tpy. After recalculating the PTE, using emission factors from AP-42, Table 1.4-2, the Department determined the natural gas heating boiler to be an insignificant emitting unit based on the PTE of 0.028 tons per year.

EU03 (Diesel Fire Pump Engine) and IEU04 (Emergency Generator) were submitted as insignificant emitting units in the original application, but placed in Permit #OP0691-00 as significant emitting units. The Department reviewed the units' emissions, and determined the diesel fire pump engine and the emergency generator are insignificant units according to the definition in ARM 17.8.1201(22)(a).

EU05 (Miscellaneous Space Heaters) is considered insignificant since each heater has emission well below 5 tons per year of criteria pollutants and 1 pound per year of HAPS. The heaters are each less than 500,000 BTU per hour. The only rules that apply are ARM 17.8.304, 309, and 322, but due to the combustion of natural gas, the emissions are minimal.

EU06 (Fuel Storage Tank) in the original application consisted of two storage tanks. The tanks were removed in 1996 and replaced with a single 155-gallon gasoline storage tank.

EU09 (Coal Bunker System) in the original application was included with EU05. Since the emissions unit is controlled by a baghouse, it was determined the unit was a distinct unit and should be treated as a separate emissions unit. In the supplemental information to the application, MDU provided the necessary information to determine which applicable requirements apply to this emissions unit. The coal bunker system consists of the enclosure directly above the three coal storage bunkers known as the Coal Tripper House. The enclosure is penetrated by the head end of conveyor #2 to the south. The discharge of the baghouse is into the enclosed structure above the storage silos. The baghouse has a force air filtration system, which pulls the displaced air from the silos and the conveyor area to control particulate emissions.

EU10 (Lime Storage Silo) was included in the supplementary information submitted by MDU on April 11, 1997. The unit is controlled by a baghouse in a closed-loop system, and by enclosures. MDU receives approximately 150 tons per year of lime.
EU11 –(Plant Roads) emissions do not include any emissions for transferring coal.

EU12 was included in the application as a significant emissions unit based on information received

April 11, 1997. For purposes of the operating permit, the requirements that pertain to the EU12 are contained in Section V., General Conditions under the stratospheric ozone requirements. Therefore, EU12 does not have a table or associated conditions in Section III. of the operating permit. At MDU, the maintenance of vehicles is performed by a certified dealer for repair and the building system repairs are contracted with a local certified repair service.

The coal hauling operations are not included in the operating permit. These operations are performed by an independent company. The independent company provides all the equipment necessary to deliver the coal and place it on the active stockpile. All trucks, unloading hopper, and stockpile conveyor are owned by the independent company. MDU takes ownership of the coal from the active coal stockpile and transports the coal to the plant. MDU's coal handling activities are addressed as part of EU8.

SECTION III. PERMIT TERMS

A. Emission Limits and Standards

The following is a discussion of some proposed applicable requirements:

1. The Phase II Acid Rain permit requirements for SO_2 have been included in this operating permit.

2. MDU submitted a Phase I Acid Rain Permit Application, NOx Compliance Plan to EPA Region VIII in October 1996. The application was submitted according to the requirements of 40 CFR §76.9 for an early election unit with a deadline of submittal of January 1, 1997. The MDU - Lewis and Clark Station boiler is a Group 1, Phase II boiler. MDU will be required to comply with the emission limit of 0.45 lb/mmBtu of heat input on an annual average basis for tangentially fired boilers (40 CFR §76.5) beginning January 1, 1997, and ending on December 31, 2007.

   In accordance with 40 CFR §76.8(d)(1)(ii), EPA is responsible for issuing the early NOx reduction permit. The state has not been delegated this authority. Under 40 CFR §72.73(b)(2), the Department is required to include not later than January 1, 1999, the acid rain permit requirements for nitrogen oxides. Since these requirements have already been incorporated into the initial operating permit, the Department will not need to re-open the acid rain/operating permit. The company under the current requirements of 40 CFR §76.9(b) must still submit a Phase II NOx permit application by January 1, 1998.

   Although not included in the operating permit, the permitting must still comply with the requirements contained in the Phase I early election permit issued by EPA Region VIII until its expiration date. Compliance with the Phase I permit will be handled by EPA.

   If MDU fails to demonstrate compliance with the applicable emissions limitations any year during the period beginning January 1, 1997, and ending December 31, 2007, the NOx Compliance Plan will be terminated. The termination will take effect beginning January 1 of the year after the year for which there is a failure to demonstrate compliance. If the early election plan is terminated, MDU will be required to comply with the applicable emissions limit for NOx for Phase II units established pursuant to section 407(b)(2) of the FCAA beginning on January 1, 2000, or on the effective date of termination if that date is after the year 2000.

3. MDU is required by 40 CFR Part 51, Appendix P to monitor opacity. Since the boiler is controlled with a wet scrubber, it was determined an opacity monitor would not provide accurate data. As an alternative, MDU developed a predictive opacity procedure and

submitted the final report and equations on April 23, 1991. The key aspects of the plan are contained in the Predictive Opacity Appendix to the operating permit. As part of the plan developed to monitor opacity, MDU performs calculations to determine the "cleanness" of the disk based on predicted disk position. Deviations from the predicted disk position flags when increased emissions are probable due to a suspected ash buildup around the flooded disk. The information from the disk position is used internally by MDU. The equations to calculate the cleanliness of the disk were modified in April 1997 to address changes due to the low NOx modifications, which occurred the end of 1996. MDU uses the scrubber differential pressure and to calculate the predicted opacity for compliance with the opacity requirement. These equations are not included in the operating permit since they are subject to change. The permit requires that prior to making a change to the equations, MDU must notify the Department. This will assure the Department is aware of any changes and has an opportunity to review the changes made.

4. MDU is required by the operating permit and a letter of agreement from the Department to use the continuous emissions monitoring system (CEMS) on the exhaust gas stream from the EU1 to determine compliance with ARM 17.8.322. The rule limits the amount of sulfur in the fuel to 1 lb of sulfur/MMBTU. The Department will allow MDU to measure the exhaust gas stream and demonstrate compliance with the limit by showing emissions do not exceed 2 lbs. of SO_2/mmBtu from the emissions unit. The SO_2 monitor on EU1 has a range of 0 ppm to 500 ppm. The span for the monitor is 0 ppm to 400 ppm. MDU performed the high end calibration at 400 ppm. This range and span was agreed to by the Department and the EPA because the wet scrubber scrubs 100% of the flue gas 100% of the time. For the first quarter of 1996, the maximum concentration measured by the monitor was approximately 320 ppm and the average monitored value was 141 ppm. These values have remained fairly consistent over the entire year and into 1997.

   The flow monitor on the EU1 stack has a range of 18,000,000 scfh. Based on calculations of the normal volume, MDU has the potential to exceed the range of the SO_2 monitor. The following calculations show that the potential exceedance could in theory occur.

   (2 lbs of SO_2/MMBtu) (600 MMBtu/hr) = 1,200 lbs of SO_2 /hr
   (1,200 lbs of SO_2/hr)/[(molecular weight of SO_2)(volume)(28.317 liters/cubic feet)
   (1 mole/24.04 liters)(1 liter/1,000,000 micro liters)(1 lb/453.6 grams)] = ppm

   (1,200 lbs of SO_2/hr)/[(64)(13,5000,000)(28.317)(1/24.04)(1/1,000,000)(1/453.6)] = 583.9 ppm

   MDU and the Department do not expect to see any exceedances of the monitor range due to the design of the boiler and scrubber. Since the monitor may not be able to measure a violation of 2 lbs of SO_2/mmBtu, the Department has required that any exceedance of the monitor range be considered an SO_2 emission violation. MDU has agreed to this requirement and it is contained in the SO_2 appendix to the operating permit. If in the future, MDU changes the range on the monitor and requests a change to the permit, the Department will review the request.

B. Monitoring Requirements

ARM 17.8.1212(1) requires monitoring be contained in the permit. It requires the monitoring required under an applicable requirement or when the applicable requirement does not contain periodic monitoring, it requires the use of monitoring "sufficient to yield reliable data" that are representative of the source's compliance with the air quality operating permit. ARM 17.8.1213(7) provides that each permit must contain requirements for certification of compliance with "the terms and conditions contained in the permit." The operating permit shield provides that compliance with the monitoring requirements in the operating permit constitute compliance with all monitoring

requirements of the FCAA. The permittee can rely on the results of periodic monitoring to certify compliance, but this does not prohibit the use of other approved methods for determining compliance with an applicable emission limit or requirement.

ARM 17.8, Subchapter 15, Compliance Assurance Monitoring (CAM) applies to MDU's Lewis and Clark Station facility. As indicated in ARM 17.8.1503(2)(c), the CAM rule is satisfied for NO_x and SO_2 under the Acid Rain provisions set forth in Appendix H of MDU's Title V Operating Permit #OP0691-01. However, MDU Lewis & Clark is subject to CAM for PM as set forth in the CAM plan submitted by MDU. Appendix I of MDU's Title V Operating Permit #OP0691-01 summarizes the CAM plan. A full CAM plan is available upon request by contacting the facility or the Department.

C. Test Methods and Procedures

This operating permit contains requirements for performing Method 9, Method 5 and Method 5A tests as required by the Department. Method 9, Method 5, and Method 5A tests must be performed in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106). Each observation period must be a minimum of 6 minutes unless any one reading is 20% or greater, then the observation period must be a minimum of 20 minutes or until a violation of the standard has been documented, whichever is a shorter period of time.

D. Recordkeeping Requirements

The recordkeeping provisions shall be sufficient to meet the provisions of the monitoring requirements and shall include, as necessary, the installation, use, and maintenance of the monitoring equipment or methods. The following information shall also be provided as necessary: the date the analyses were performed, the place and time of the sampling, the company or entity performing the sampling, the analytical techniques or methods used, the results of such analyses, and the operating conditions at the time of the analyses. Retention of the records of all required monitoring data and support information shall be for a period of at least five years from the date of measurement. Support information includes all calibration and maintenance records and copies of all reports required by the operating permit.

E. Reporting Requirements

MDU is required to submit, to the Department, reports of any required monitoring at least every six months and to annually certify compliance with the applicable requirements contained in the permit. All deviations from permit requirements must be clearly identified in these reports. All reports must be certified by a responsible official. The permittee is also required to promptly report any deviations from the permit requirements due to upset conditions and the probable cause of the upset condition along with any corrective actions or preventive measures taken.

F. Public Notice

In accordance with ARM 17.8.1232, a public notice was published in the *Sidney Herald* newspaper on or before November 3, 2003. The Department provided a 30-day public comment period on the draft operating permit from November 3, 2003, to December 3, 2003. ARM 17.8.1232 requires the Department to keep a record of both comments and issues raised during the public participation process. The Department did not receive any comments on the draft operating permit.

G. Facility Comments on Proposed Permit #OP0691-02

On February 9, 2004, the Department received a request from MDU to change the Responsible Official and the facility contact person for Permit #OP0691-02. The Responsible Official is Andrea L. Stomberg, and the facility contact person is Jay Skabo. The Department updated the facility's Permit #OP0691-02 to reflect these changes.

SECTION IV. NON-APPLICABLE REQUIREMENTS ANALYSIS

Section IV of the operating permit "Non-applicable Requirements" contains the requirements that the Department determined were non-applicable. MDU did not identify any non-applicable requirements on a facility-wide basis or an individual emissions unit basis. MDU did not identify any specific rules or regulations as non-applicable to the facility. No rules or regulations have been included in the non-applicable section of the operating permit.

The following rule is not applicable to the facility due to the date of construction being after the affected facility applicability date in the subparts: 40 CFR 60, Subpart D.

SECTION V. FUTURE PERMIT CONSIDERATIONS

A. MACT Standards

MDU is subject to a MACT standard. The MACT that will be applicable to this facility is 40 CFR 63, Subpart DDDDD, scheduled to be promulgated on April 28, 2004.

B. Risk Management Plans

A Risk Management Plan as defined in 40 CFR Part 68 is not required for MDU Lewis and Clark Station based on information provided by MDU on April 11, 1997, and June 26, 2002. MDU does not currently store any regulated substances which exceed the threshold quantities. If in the future, the materials stored at MDU change or the thresholds change, MDU may need to comply with Part 68.

C. NESHAPS Standards

As of October 31, 2003, the Department is unaware of any future NESHAP Standards that may be promulgated that will affect this facility. NESHAP Standard 40 CFR 61, Subpart M does apply to the facility at this time.

D. NSPS Standards

As of October 31, 2003, the Department is unaware of any future NSPS Standards that may be promulgated that will affect this facility.